R0 63-03

5200-Forest Insect & Disease Control
Dwarfmistletoe Survey

Lat 39.97413
Lon -120.19105

DWARFMISTLETOE SURVEY

BLOOMER UNIT OF MILFORD RANGER DISTRICT

PLUMAS NATIONAL FOREST

Prepared by Gary D. Morgan
Gary D. Morgan, Z.M.A. Date 3-11-63

Approved by [signature]
J. H. Specht, District Ranger Date 4-2-63

Approved by WILLIAM A. PETERSON, Forest Supervisor

By _____ Date _____
Acting Forest Supervisor

INTRODUCTION

A survey to delineate the location and determine the intensity of dwarfmistletoe infection was conducted during the summer of 1962. This survey was conducted on the Milford Ranger District, Plumas National Forest, by a two-man project crew. The survey covered a gross area of 4,860 acres on all or portions of T.24N., R.16E., Sections Sections 2, 3, 4, 10 and 11; T.25N., R.16E., Sections 20, 21, 22, 27, 28, 29, 32, 33, 34 and 35, M.D.M. This area is approximately 18 miles south of Milford, falling between Little Last Chance Creek and Crystal Peak.

History: The major portion of this area was logged on its first cutting cycle in 1949-1950 on a high risk basis, with subsequent periodic insect salvage operations. Although periodic thunderstorm activity creates small fire problems, there have been no fires of great consequence in this area according to present fire control records. The ownership pattern is primarily government. There are some mining claims and small parcels of private land within the sale boundaries. There is a large quantity of private land surrounding the western edge of the sale.

Elevation: Elevations run from 5600 feet at the lower levels to 7350 feet at the highest peak.

Soils: The soils are primarily of granitic origin. There are small areas covered with volcanic lava cap. Large rock outcrops, cliffs and bedrock shelves are found on the higher elevations.

Site: The average timbered site is about IV, with some unmerchantable areas in site V. No control measures are being considered on unmerchantable areas.

Tree species: The principal tree species are ponderosa and jeffrey pine and white fir. Individual trees of each species are found to be infected by appropriate species of Arceuthobium.

The Problem

The Bloomer Lake Unit of the Eastside Block, Eastern Plumas Working Circle, is ready for marking on the second cutting cycle. Dwarf-mistletoe control will be one of the primary considerations of the cutting prescription. The mistletoe infection has spread throughout the proposed sale area (see attached map # 1). Failure to control the disease will result in the loss of a large area for future timber production. For this reason, control is warranted wherever economically feasible.

Inventory

Survey: A delineation survey was made in July and August of 1962 by a two-man seasonal project crew. Both members of the crew were college students. Training for these two men was conducted by district, supervisor and regional staff personnel. After sufficient training, each man worked independently using a continuous strip sampling method. These one-half chain wide strips were at ten-chain intervals and were run by using hand compass and pacing. Approximately 8 miles of control line was strung and tagged to control the survey. Approximately 58 miles of survey strip were traversed.

Data Collection: Each tree, within the five-chain transect, was individually examined for infection. Data was recorded appropriately on data sheets by five-chain transects (see attached data sheet). These forms are published by the Regional Office.

Mapping: An 8" = 1 mile field map was prepared for each section within the proposed sale area. From these 8" = 1 mile field maps, a composite map was drawn at a 4" = 1 mile scale for inclusion in this report (see attached map # 2). Data on reproduction and poles was summarized by five-chain transects, i.e. $\frac{3\text{-}10}{11}$, which means that 3 infected but prunable and 10 infected and unprunable, and 11 uninfected trees were found on that transect. From this data, the survey summary sheets, and field tally sheets, the percent of infection was computed.

Type lines were drawn between areas of varying degrees of infection. Withe this recorded on the type map, intensities of infection by areas were shown as follows:

Under 2% no infection (white)
2% - 10% light infection (green)
10%-33% medium infection (yellow)
Over 33% heavy infection (red)
2% - 33% variable infection (pink)

Survey Records: All work sheets, field maps, and data sheets are being kept in district files by individual section envelopes. Finished and detailed survey maps by section showing infection intensity are being kept in individual folders ~~by section~~. It is from these finished maps that future surveys will be based on and data obtained, compared with present information.

Guidelines: It should be noted that the procedures followed throughout this survey were patterned after the procedures outlined by N. J. MacGregor. Reference is made to the draft outline (5220) by N. J. Mac Gregor on "Dwarfmistletoe Surveys in California" (Preliminary Instructions) of July 9, 1962. This outline proved of great value for the entire survey.

Costs: The costs included here are the costs incurred at the district level for the entire survey. No costs above the district level are included. The costs are initiated from the training field surveys, survey checks, mileage, supervision and data computation in the office. The following is a summary of these costs:

Salaries	=	$1,533.54
Mileage	=	120.56
Supplies	=	19.54
Total		$1,673.64

Determination of Control Method

Before any close analysis of the data could be made and before any definite recommendations or conclusions could be drawn, a general method or plan of control had to be followed. The control methods recommended are patterned after the general guide line outlined on page 10 of Technical Paper # 14, "Dwarfmistletoes of California and Their Control".

Recommended Control Procedures:

1. General areas of control should be delineated on the ground.
2. Overhead sources of infection should be removed by harvesting all merchantable infected trees, unless infection can be pruned out.
3. All mistletoe infections in pole stands and reproduction should be removed by pruning out the mistletoe in all infected trees unless the infection is so far advanced that pruning would be ineffective. If the mistletoe is on the bole of the tree or within 2" of the bole, the tree should be cut. There are occasions however, where the infection may be closer than 2" and the tree not cut. In situations where the infection is very small and yet within 2" of the bole, it is felt that the infection should be pruned away rather than the tree cut. The District policy here is based on the assumption that if the infection is not highly developed and that the hypha has not penetrated the bole to any great extent, that the infection will not reappear after pruning.

4. Re-examination of trees and removal of mistletoe should be done after three years, and repeated at five year intervals.
5. Protective zones (buffer strips) to prevent the spread of infection from adjacent areas should be maintained.

Delineation of Areas

Type lines delineating various degrees of infection (none, light, medium and heavy) were delineated on the attached map as well as the 5-chain transect summary figures on the survey strips. In addition, map # 3 delineates areas in which control work is economically feasible. Hence, there will be adequate residual stocking in the areas to be controlled, following control work. The following table is based on map # 3. (See page 4a).

The total cost for the initial treatment will be $12,069.73. The second and third follow up treatments amount to about one third of the initial cost for total of $4,022.84. Hence, the total control costs for this unit will be $16,092.57.

In addition, there are 6 miles of protective zones (buffer strips) which are needed in order to prevent the spread of infection from non-controllable areas into areas in which control work has been performed. Based on an experimental cost study in fall of 1962, average buffer strip costs are $300/mile. Hence, total buffer strip cost for this unit, including 30% assessment is $2,340.00.

There are 100 acres of uncontrollable area on which site is high and planting is feasible. It is therefore planned that this 100 acres shall be machine scarified so as to remove all infected trees. Slash piles will then be burned and the area planted. It shall be kept in mind during this operation that planted trees shall of sufficient distance from the nearest infected tree that infection of the planted tree is impossible. Costs for the clearing, burning and planting should be approximately $75/acre. Hence, total cost for this project, including 30% assessment will be $9,750.00.

Based on the above proposed control and regeneration program, total costs for this unit shall be $28,182.57.

Other T.S.I. measures

1. Pine Release: It was computed from the survey data that 100 acres are stocked with pine which are in need of release from fir. Costs will be $10/acre for a total of $1,300.00, which includes 30% assessment.

2. Pine Thinning: The survey data indicates that about 110 acres of pine are in need of thinning. Costs will be $10/acre for a total of $1,430.00, which includes 30% assessment.

Table of costs for economically feasible dwarfmistletoe control work on the Bloomer Unit:

Infection Class	Acres	Trees to Prune 0"-3"	4"-7"	8"-11"	12"-16"	Trees to Cut 0"-3"	4"-7"	8"-11"	12"-16"
Variable	33	33	132	79	33	396	99	33	99
Light	39	234	203	78	78	546	277	39	39
Medium	41	246	205	82	89	1886	492	205	82
Heavy	561	3927	2805	2763	1683	28611	9537	1731	1683
Total	674	4440	3345	3002	1883	31439	10405	2008	1903
Basic Treatment Cost/Tree		.10	.15	.35	.60	.10	.15	.25	.50
Cost		444.00	501.75	1050.70	1129.80	3143.90	1560.75	502.00	951.50
30% Assessment		133.20	150.53	315.21	338.94	943.17	468.23	150.60	285.45
Total Cost		577.20	652.28	1365.91	1468.74	4087.07	2028.98	652.60	1236.95

3. Quality Pruning: No quality pruning is suggested.

Total T.S.I. costs including assessments:

Dwarfmistletoe Control	$16,092.57 ÷ 674 Acres = $24.00/A
Buffer Strips	2,340.00
Regeneration	9,750.00
Pine Release	1,300.00
Pine Thinning	1,430.00
Total	$30,912.57

Since it is necessary to cover the above costs with KV funds to be collected on the proposed Bloomer Unit timber sale, an estimate of the cut volume and stumpage values is necessarily included. The Bloomer Unit lies within two miles of the Grigsby Canyon unit in a northeasterly direction. It is felt that timber volumes by species on the Grigsby Unit can serve as a guide for the Bloomer Unit volume estimates. It is estimated then, that the cut per acre on the Bloomer Unit will be 2.50/acre, with 81% Ponderosa pine, 18% White fir and 1% Incense cedar. Then the estimated volumes for the Bloomer Unit are:

PP & JP	8,100 M
WF	1,800 M
IC	100 M
Total	10,000 M

There will be a large proportion of this volume in the smaller DIB groups due to the nature of the control cutting; hence, it is not foreseeable that this timber will be valued at a higher rate than the Grigsby Canyon Unit which sold at minimum prices of $9.90/M for pine and $1.00/M for fir and cedar. The total estimated stumpage value of the Bloomer Unit then shall be:

Pine	$80,190.00
Fir	1,800.00
Cedar	100.00
Total	$82,090.00

Hence, the total net stumpage which will be available after removing KV costs ($30,912.57) from total stumpage receipts ($82,090.00) will be about $51,177.43.

It is recommended that sufficient KV funds be collected, when the Bloomer Unit is sold, to initiate the dwarfmistletoe control and T.S.I. measures as outlined in this report.

References:

1. Plumas Forest "Dwarfmistletoe Survey Procedures" - Phil Intorf, 9-23-59.
2. Technical Paper #19 "Dwarfmistletoes of California and Their Control", J. W. Kimmey.
3. Milford Ranger District "Timber Sale Appraisal - Grigsby Canyon Unit.
4. "Dwarfmistletoe Survey - Grigsby Canyon Unit of Milford Ranger District, Plumas National Forest", Edgar Falkner, 3-22-60.

DWARFMISTLETOE SURVEY SUMMARY

TIMBER SALE _____ CONTROL UNIT _____ T. ___ R. ___ S. ___

TREE SPECIES ____ STRIP AC OF SAMPLE ____ AC IN CONTROL UNIT ____

1	SIZE CLASSES	U.A.C. UNDERSTORY COND CL.					TOTAL
2		DBH LIMITS	0-3	4-7	8-11	12-16	
	NUMBER OF TREES						
3	UNINFECTED	NO.					
4	CROP TREES	PER ACRE					
5	PRUNABLE	NO.					
6	TREES	PER ACRE					
7	TOTAL TREES TO BE	NO.					
8	PROTECTED	PER ACRE					
9	CUT TREES	NO.					
10	DOM + CODOM	PER ACRE					
11	CUT TREES	NO.					
12	INT. + SUP.	PER ACRE					
13	TOTAL TREES	No					
14	TO BE CUT	PER ACRE					
	STOCKING						
15	NUMBER OF TREES PER ACRE NEEDED FOR MIN ACCEPTABLE STOCKING		150	80	60	40	X
16	STOCKING IN TREES TO BE PROTECTED (FROM LINE 8)						
17	STOCKING IN DOM. + CODOM. TREES TO BE CUT (FROM LINE 10)						
18	TOTAL PRESENT STOCKING (LINE 16 + LINE 17)						
19	PERCENT OF ACCEPTABLE STOCKING REMAINING						

	MERCHANTABLE TREES		18-20	22-24	26-28	30-32	34-36	38-40	42-50	52+	TOTAL
20	INFECTED	NO.									
21		PER AC.									
22	UNINFECTED	No									
23		PER AC.									

ESTIMATE OF CONTROL COST

TYPE OF WORK: CONTRACT ( ) FORCE ACCOUNT ( )

FINANCING: PEST CONTROL FUNDS ( ) K-V FUNDS ( )

1. PREPARATION (Including delineating control unit, marking trees, and contract preparation.)

   Man days needed _____
   Cost per man day _____
   Total Cost - - - - - $_____

2. CUTTING

   Cost per tree _____
   Trees per acre _____
   Cost per acre _____
   Total Cost - - - - - $_____

3. PRUNING

   Cost per tree _____
   Trees per acre _____
   Cost per acre _____
   Total Cost - - - - - $_____

4. SLASH DISPOSAL

   Cost per acre _____
   Acres _____
   Total Cost - - - - - $_____

5. INSECT CONTROL

   Cost per acre _____
   Acres _____
   Total Cost - - - - - $_____

6. SUPERVISION (Including contract administration and inspection.)

   Man days needed _____
   Cost per man day _____
   Total Cost - - - - - $_____

7. EQUIPMENT AND SUPPLIES - - - - - - - - - - - - - - - - $_____

8. VEHICLE MILEAGE - - - - - - - - - - - - - - - - - - - $_____

   TOTAL INITIAL TREATMENT - - - - - - - - - - - - $_____

9. FOLLOW-UP TREATMENTS - $_____

   TOTAL FIELD EXPENSE - - - - - - - - - - - - - $_____

10. ALLOWANCE FOR OVERHEAD ASSESSMENT - - - - - - - - - - - - - - - - - $_____

    TOTAL PROJECT COST - - - - - - - - - - - - - $_____

    TOTAL COST PER ACRE - - - - - - - - - - - - - $_____

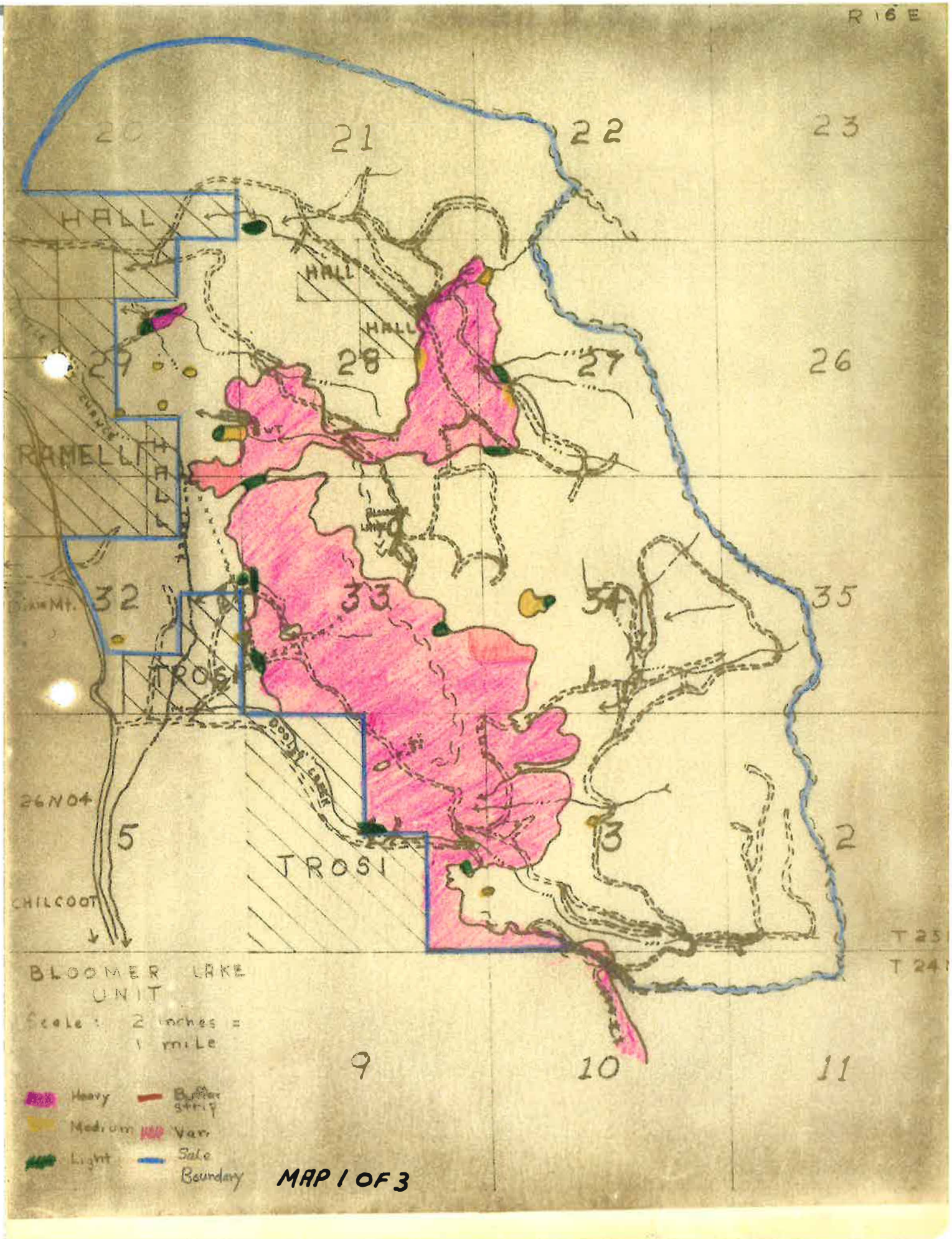
7/10/62

DWARFMISTLETOE SURVEY DATA SHEET

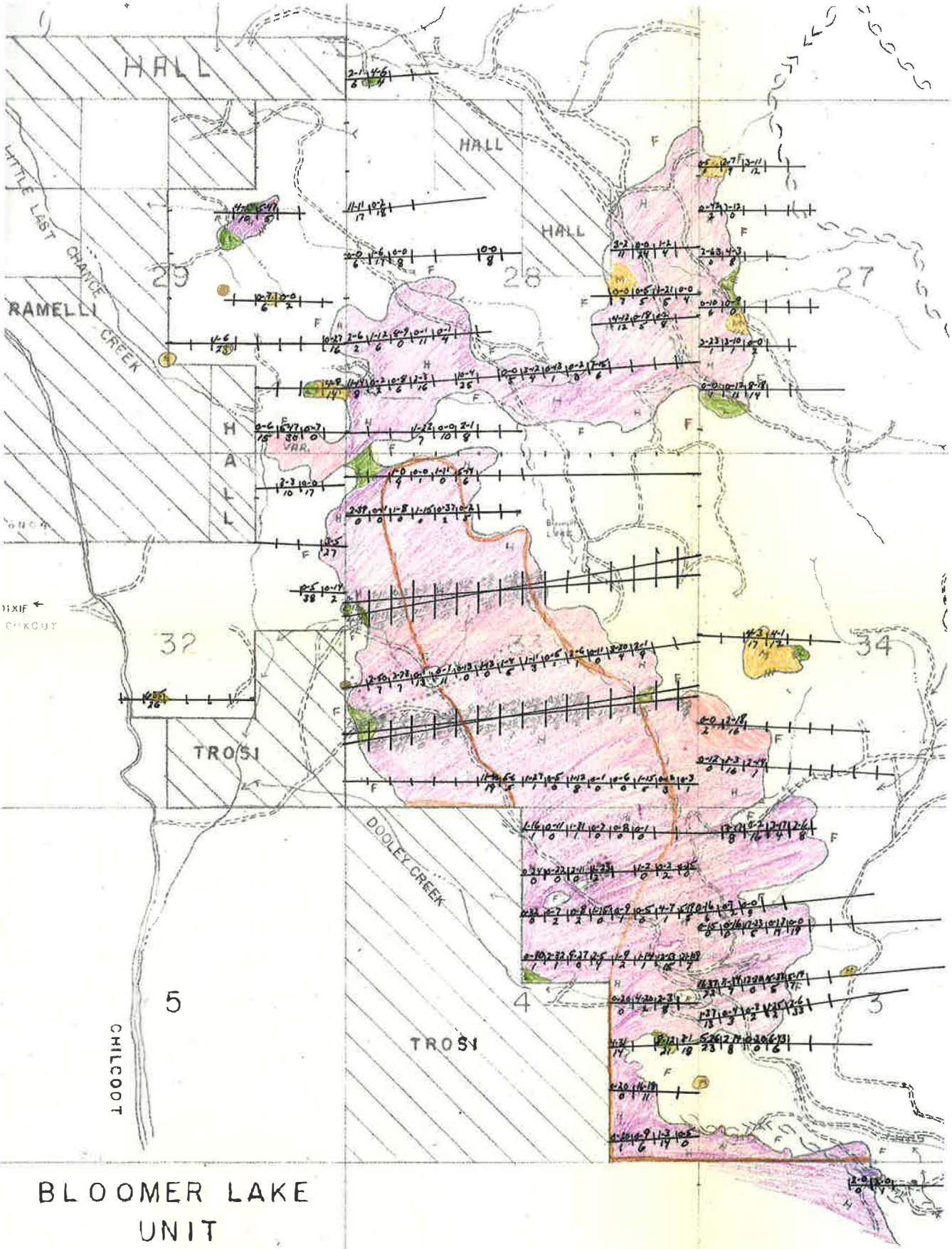
NAME _____ DATE _____ STRIP ____ T. ___ R. ___ S. ____

RUNNING _____ FROM _____ OF _____ CORNER

TRANS. No.	DWARFMISTLETOE FORM	INFECTED											UNINFECTED						STAND CONDITION CLASS
		PRUNE					CUT						CROP TREES						
		0 TO 3	4 TO 7	8 TO 11	12 TO 16	TOTAL	0 TO 3	4 TO 7	8 TO 11	12 TO 16	TOTAL	MERCHANTABLE	0 TO 3	4 TO 7	8 TO 11	12 TO 16	TOTAL	MERCHANTABLE	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20


R 16 E
20
21
22
23
HALL
HALL
HALL
29
28
27
26
RAMELLI
HALL
32
33
34
35
TROSI
26N04
5
4
3
2
TROSI
CHILCOOT
T 25
T 24
BLOOMER LAKE UNIT
Scale: 2 inches = 1 mile
9
10
11
Heavy
Medium
Light
Buffer strip
Var.
Sale Boundary

MAP 1 OF 3



BLOOMER LAKE UNIT

SCALE: 4 INCHES EQUAL ONE MILE

LEGEND

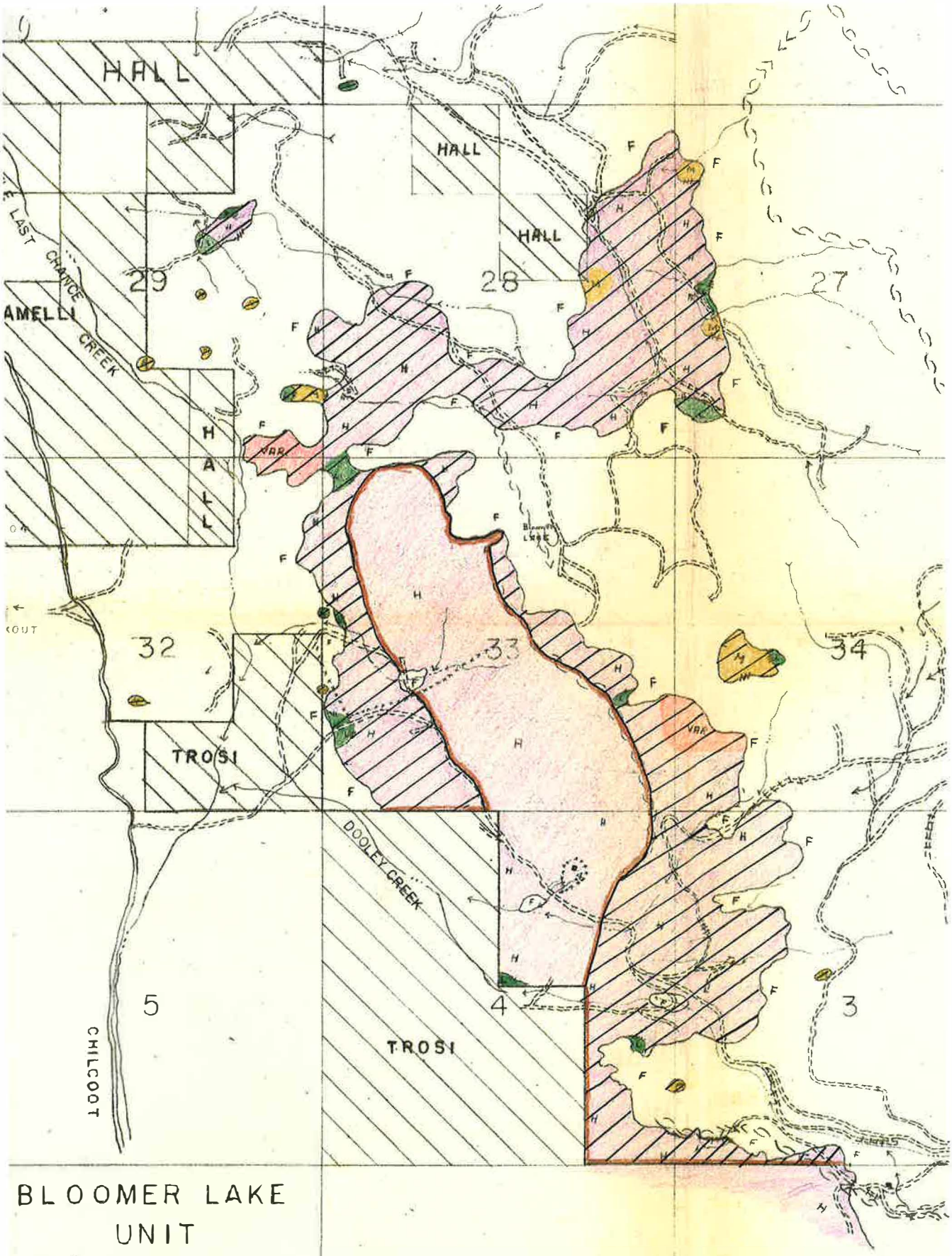
- HEAVY
- MEDIUM
- LIGHT
- CONTROL ZONE
- BUFFER STRIP
- UNMERCH.

DWARFMISTLETOE SURVEY — 1962

DATE: AUGUST 24, 1962

DRAWN BY H. SPENCER

DATA BY G. BONHAM
H. SPENCER



BLOOMER LAKE UNIT

SCALE: 4 INCHES EQUAL ONE MILE

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DWARFMISTLETOE SURVEY — 1962

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DRAWN BY H. SPENCER

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H. SPENCER